Approach to the Patient with Gastrointestinal tract diseases

LECTURE IN INTERNAL MEDICINE PROPAEDEUTICS

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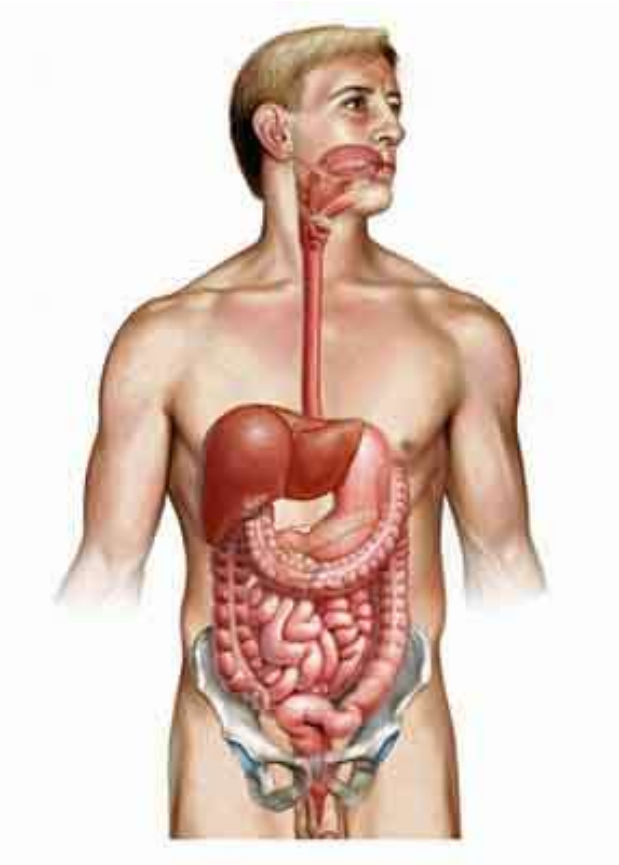
Plan of the lecture



Approach to the Patient with Gastrointestinal tract diseases

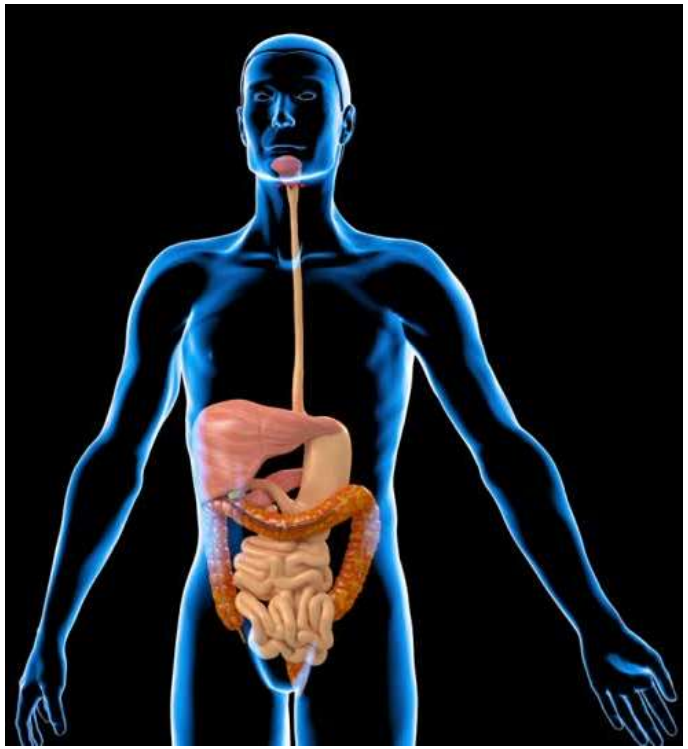
- Interviewing of the patient
- Physical examination of the patient
- Instrumental methods
- laboratory methods

http://jonbarron.org/sites/default/files/images/digestive_tract.jpg

Gastrointestinal tract diseases

Diseases involving the gastrointestinal tract:

- Esophagus
- Stomach
- Small intestine
- large intestine
- Rectum



http://footage.framepool.com/shotimg/qf/285045659-colon-rectum-gastrointestinal-tract-esofagus.jpg

Interviewing of the patient: Good questions to get started on the core interview

- Communication skills:
- Active listening
- Empathy
- Building rapport
- Open-ended questions
- Leading questions
- Silence
- “Why” questions
- Nonverbal communication cues

http://makingsociety.com/wp-content/uploads/2015/04/user-research-interview-questions.jpg http://samples.jbpub.com/9781449652722/9781449645106_CH01_001_036.pdf

Interviewing of the patient: Good questions to get started on the core interview

- What is your chief complaint?
- Tell me why you're here today
- Tell me about your injury
- What can I do to help you?
- Explain to me your understanding of your injury

http://healthnavigator.com/wp-content/uploads/2014/03/NEWARROW-1024x923.png

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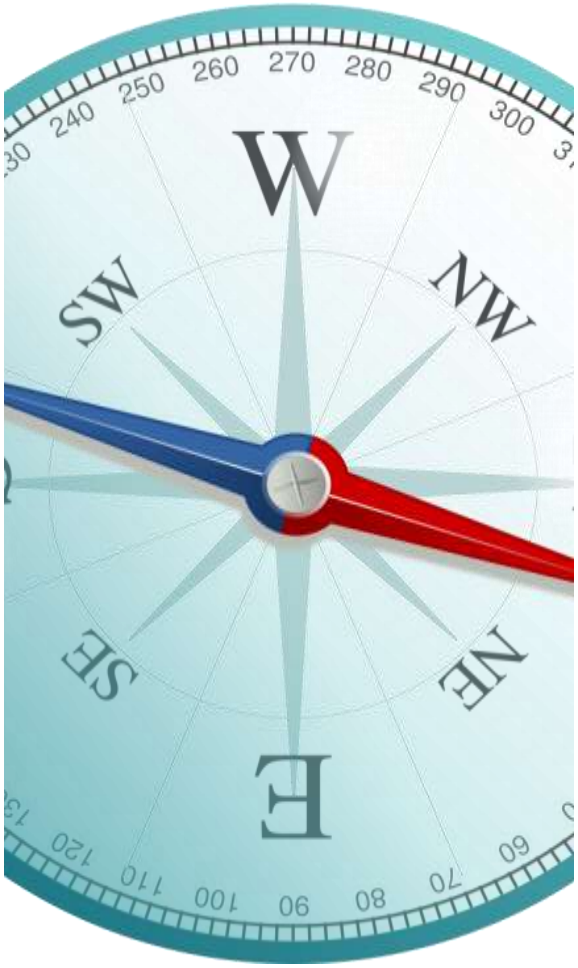
Interviewing of the patient: Patient profile

- Age
- Sex
- Race/Ethnicity
- Handedness
- Ht-Wt-BMI-Body type
- Primary language
- Barriers to learning
- Learning preference
- Unique rehabilitation goals



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Interviewing of the patient: Chief complaints

- Abdominal Pain
- Heartburn
- Belching
- Indigestion/dyspepsia
- Bloating (Flatulence)
- Constipation
- Diarrhea (acute, chronic)
- Nausea and Vomiting
- Hemorrhoids
- Stool admixtures

http://www.millersurgery.co.uk/uploads/Abdominal-Pain.jpg

Interviewing of the patient: Chief complaints' "red flags"

- Fever
- Acute/persistent diarrhea
- Persistent constipation
- Blood in stools (tarry stool)
- Persistent nausea or vomiting
- Vomiting blood
- Severe tenderness of the belly
- Unintended weight loss
- Symptom onset after age 50

- Dysphagia
- Anorexia or early satiety
- Prior Peptic Ulcer Disease history
- Jaundice
- Palpable abdominal mass
- Rectal bleeding

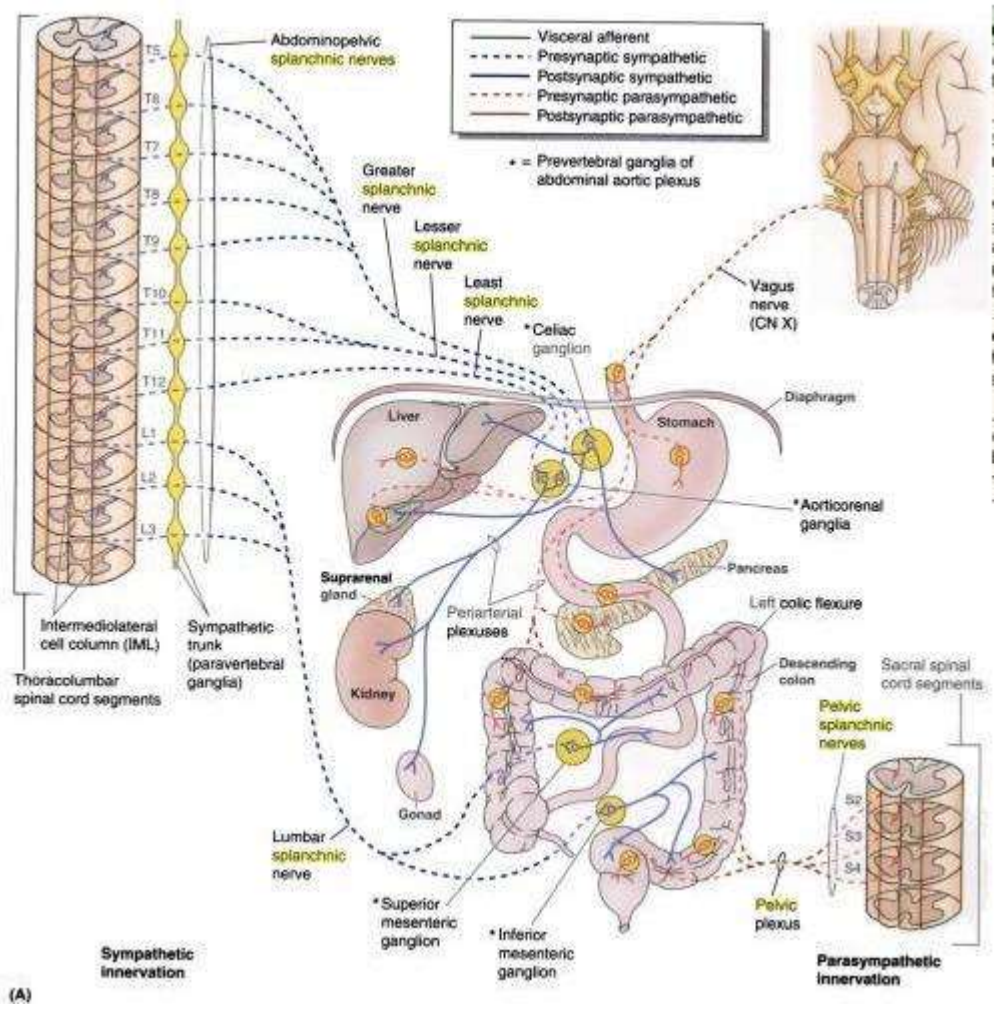
http://pedemmorsels.com/wp-content/uploads/2015/05/Red-Flags.png

Interviewing of the patient: Abdominal Pain

- Nerves are constantly monitoring activities in the body, and when those messages are transmitted to the brain and come into consciousness as unpleasant sensations, we may sense pain or discomfort
- Pain can arise from any of the structures within the abdomen or the abdominal wall
- In addition, pain messages originating in the chest, back, or pelvis can sometimes be perceived as coming from the abdomen (e.g., patients with heart attacks or pneumonia sometimes complain of upper abdominal pain rather than chest pain)

http://patients.gi.org/topics/abdominal-pain/

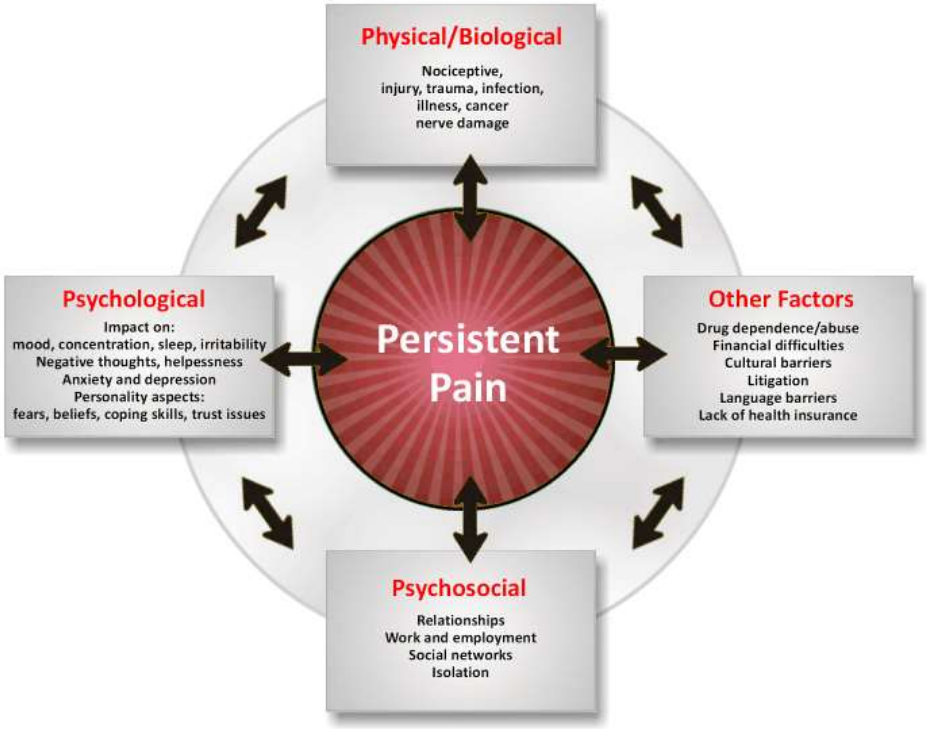
Interviewing of the patient: Abdominal Pain



http://patiehttps://anatomytopics.files.wordpress.com/2009/01/sns-pns-ab-pelvis-organs-shown.jpg nts.gi.org/topics/abdominal-pain/

Interviewing of the patient: factors that influence pain

- Physical stress
- Meals
- Emotional stress
- Cold
- Sexual intercourse
- Smoking
- Sleeping problems



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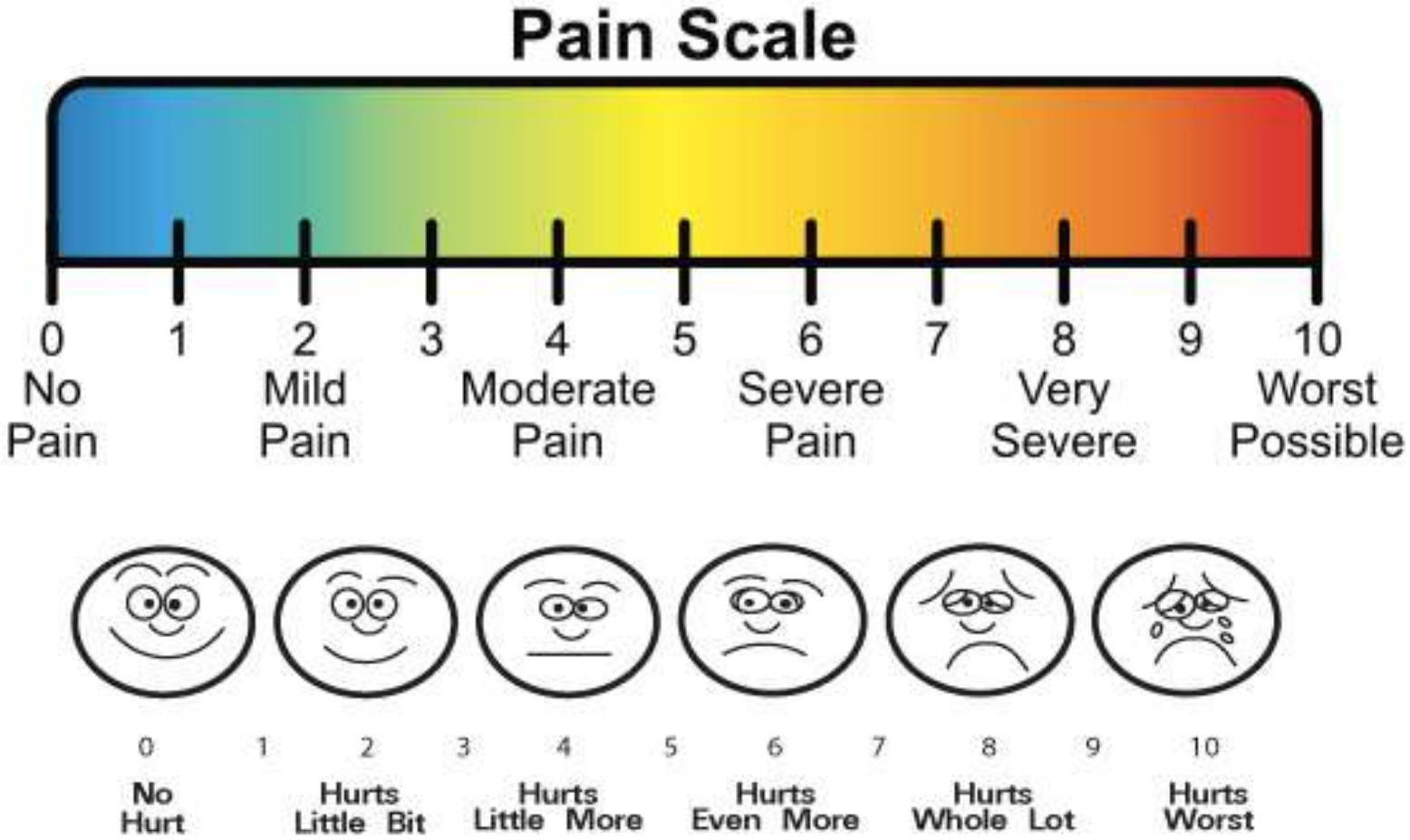
Interviewing of the patient: Visual Analog and Numerical Pain Rating Scales



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Interviewing of the patient: Common causes of pain

- Non-abdominal causes
- Abdominal or chest wall pain
- Inflammatory conditions of the upper abdomen
- Functional problems of the abdomen
- Cancers of the upper abdomen
- Vascular problems
- Inflammatory conditions in the mid- and lower abdomen
- Bowel obstruction
- Urinary tract problems
- Pelvic problems in women

http://www.abdopain.com/images/abdomen-grid-of-causes.jpg

Interviewing of the patient: OPQRST mnemonic

- Onset of the event: what the patient was doing when it started (active, inactive, stressed), whether the patient believes that activity prompted the pain, and whether the onset was sudden, gradual or part of an ongoing chronic problem
- Provocation or palliation: whether any movement, pressure (such as palpation) or other external factor makes the problem better or worse
- Quality of the pain: this is the patient's description of the pain
- Region and radiation: where the pain is on the body and whether it radiates (extends) or moves to any other area
- Severity: the pain score (usually on a scale of 0 to 10)
- Time (history): how long the condition has been going on and how it has changed since onset (better, worse, different symptoms), whether it has ever happened before, whether and how it may have changed since onset, and when the pain stopped if it is no longer currently being felt.

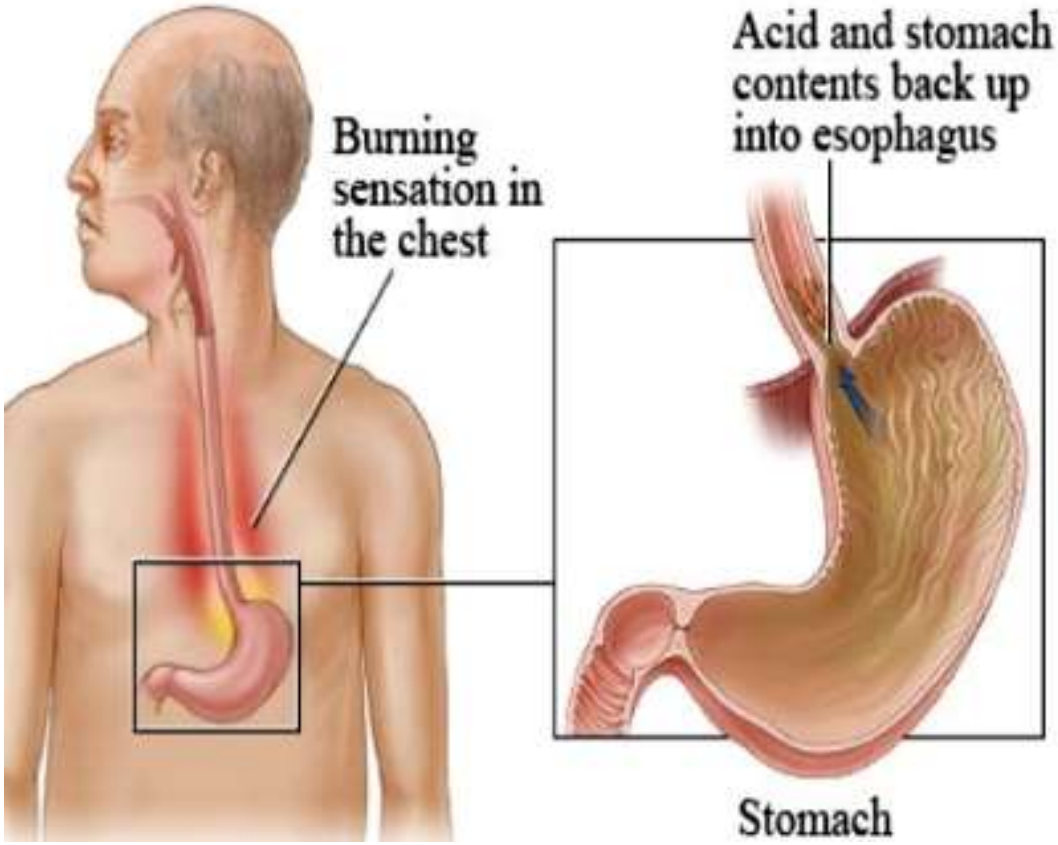
https://en.wikipedia.org/wiki/OPQRST

Interviewing of the patient: Heartburn

- Symptoms of heartburn, also known as acid indigestion, are more common among the elderly and pregnant women
- Most people will experience heartburn if the lining of the esophagus comes in contact with too much stomach juice for too long a period of time
- The stomach juice consists of acid, digestive enzymes, and other injurious materials and the prolonged contact of acidic stomach juice with the esophageal lining injures the esophagus and produces a burning discomfort
- Normally, a muscular valve at the lower end of the esophagus called the lower esophageal sphincter or “LES” — keeps the acid in the stomach and out of the esophagus
- In gastroesophageal reflux disease or GERD, the LES relaxes too frequently, which allows stomach acid to reflux, or flow backward into the esophagus

http://patients.gi.org/topics/common-gi-symptoms/#common

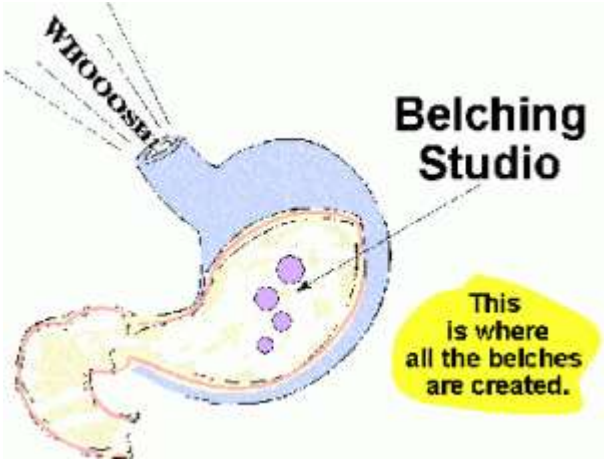
Interviewing of the patient: Heartburn



http://tripoliclinic.com/wp-content/uploads/2013/12/Home-Remedies-for-Heartburn.jpg

Interviewing of the patient: Belching

- The act of bringing up air from the stomach
- IT is most often a normal process
- The buildup of air in the upper stomach causes the stomach to stretch
- Excessive or repeated belching may be caused by swallowing air without realizing it (aerophagia)
- Belching may last longer or be more forceful depending on what is causing it
- Symptoms such as nausea, dyspepsia, and heartburn may be relieved by belching



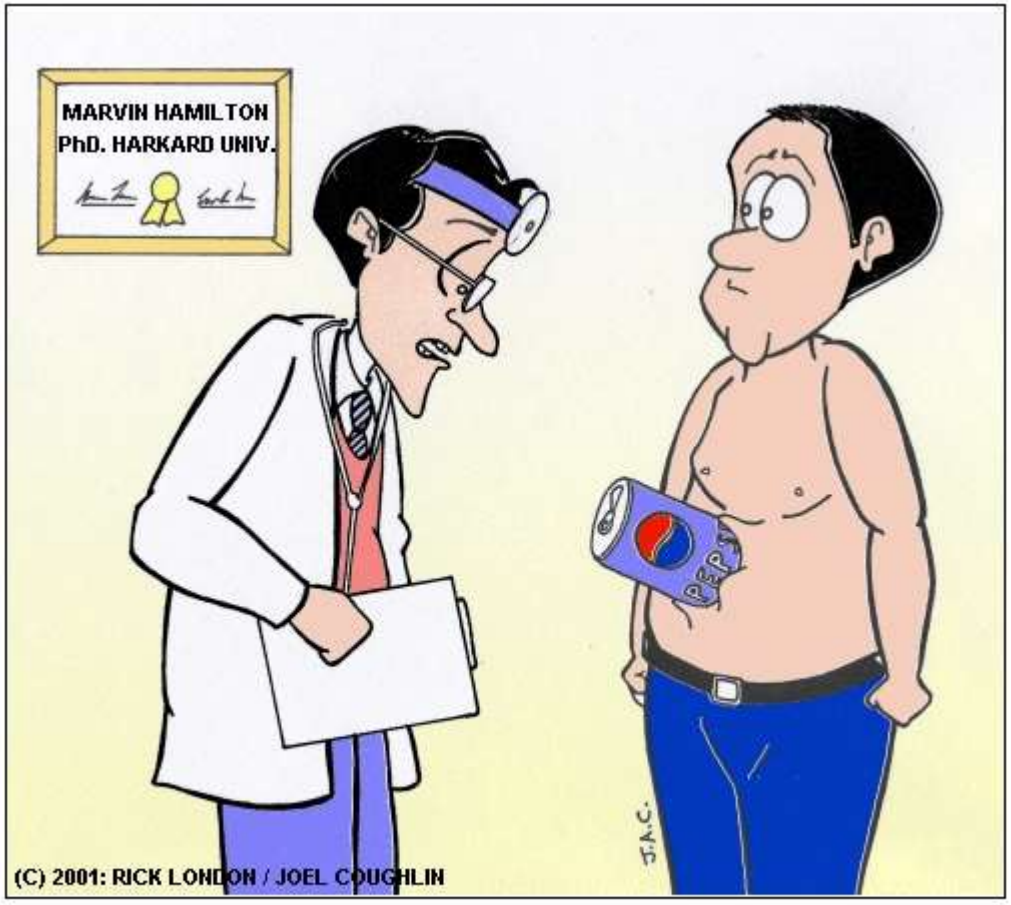
https://katiamis.wordpress.com/2013/04/10/belching/

Interviewing of the patient: Indigestion/dyspepsia

- Indigestion, also known as dyspepsia, is a term used to describe one or more symptoms including a feeling of fullness during a meal, uncomfortable fullness after a meal, and burning or pain in the upper abdomen
- Indigestion is common in adults and can occur once in a while or as often as every day
- Indigestion symptoms:
  - Fullness during a meal
  - Bothersome fullness after a meal
  - Epigastric pain
  - Epigastric burning

http://patients.gi.org/topics/common-gi-symptoms/#common

Interviewing of the patient: Indigestion/dyspepsia



LOOKS LIKE DYSPEPSIA, RALPH

https://s-media-cache-ak0.pinimg.com/736x/da/2d/db/da2ddb1a4500e3aebd1fb8c912bf7e57.jpg

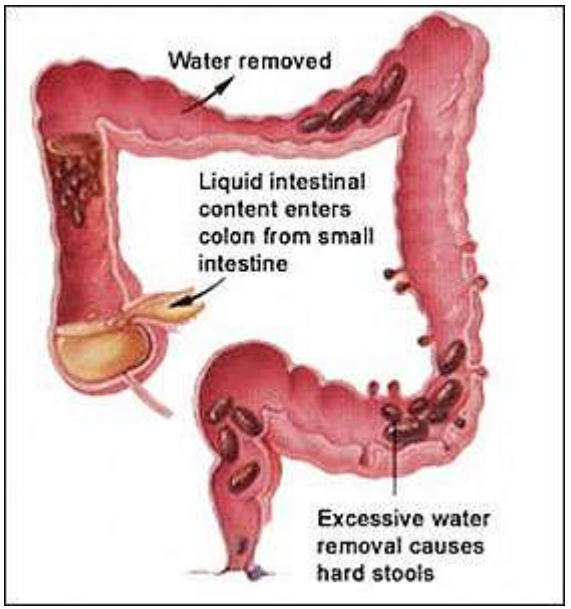
Interviewing of the patient: Bloating & Flatulence

- Bloating refers to a sense of fullness in the upper abdomen and can be influenced by gas and/or food accumulation in the stomach
- Flatulence refers to the passage of rectal gas produced by the action of colon bacteria on undigested carbohydrates.
- Gas which accumulates in the right upper portion of the colon can lead to pain which could seem like gallbladder pain
- Gas which accumulates in the left upper portion of the colon can radiate up to the chest and seem like cardiac pain

http://www.rapolac.eu/images/fatigue-dry-skin-constipation-weight-gain-vegas-exhibitors-ibs-las-list-8962.jpg

Interviewing of the patient: Constipation

- Constipation (costiveness, dyschezia) refers to bowel movements that are infrequent or hard to pass
- Constipation is a common cause of painful defecation
- Severe constipation includes obstipation (failure to pass stools or gas) and fecal impaction, which can progress to bowel obstruction and become life-threatening
- Two types of constipation : obstructed defecation and colonic slow transit (or hypomobility)



http://www.cureconstipation.net/wp-content/uploads/2013/03/pregnancy-constipation-diagram.jpg http://patients.gi.org/topics/common-gi-symptoms/#common

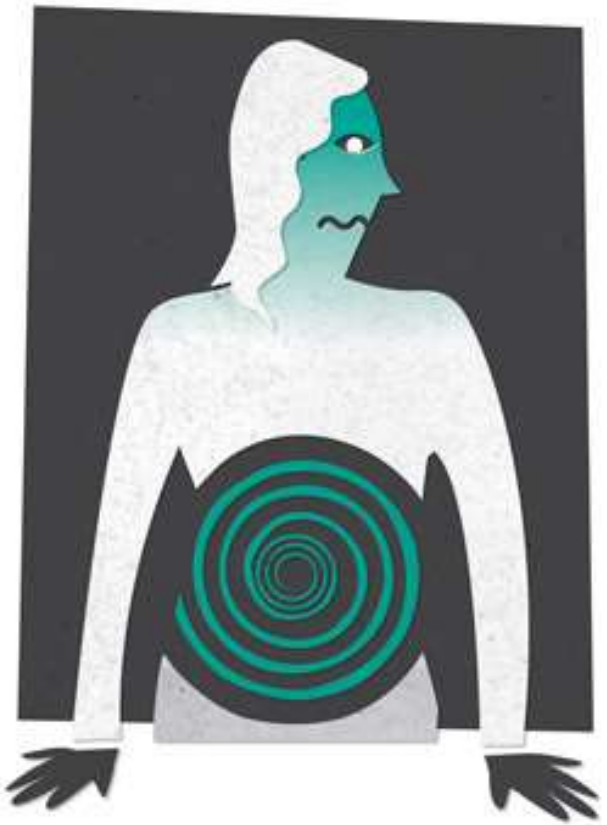
Interviewing of the patient: Diarrhea (acute, chronic)

- Diarrhea (diarrhoea) is the condition of having at least three loose or liquid bowel movements each day
- It often lasts for a few days and can result in dehydration due to fluid loss
- Signs of dehydration often begin with loss of the normal stretchiness of the skin and changes in personality
- This can progress to decreased urination, loss of skin color, a fast heart rate, and a decrease in responsiveness as it becomes more severe

http://www.theluxuryspot.com/wp-content/uploads/2015/03/shutterstock_103672964.jpg https://en.wikipedia.org/wiki/Diarrhea

Interviewing of the patient: Nausea and Vomiting

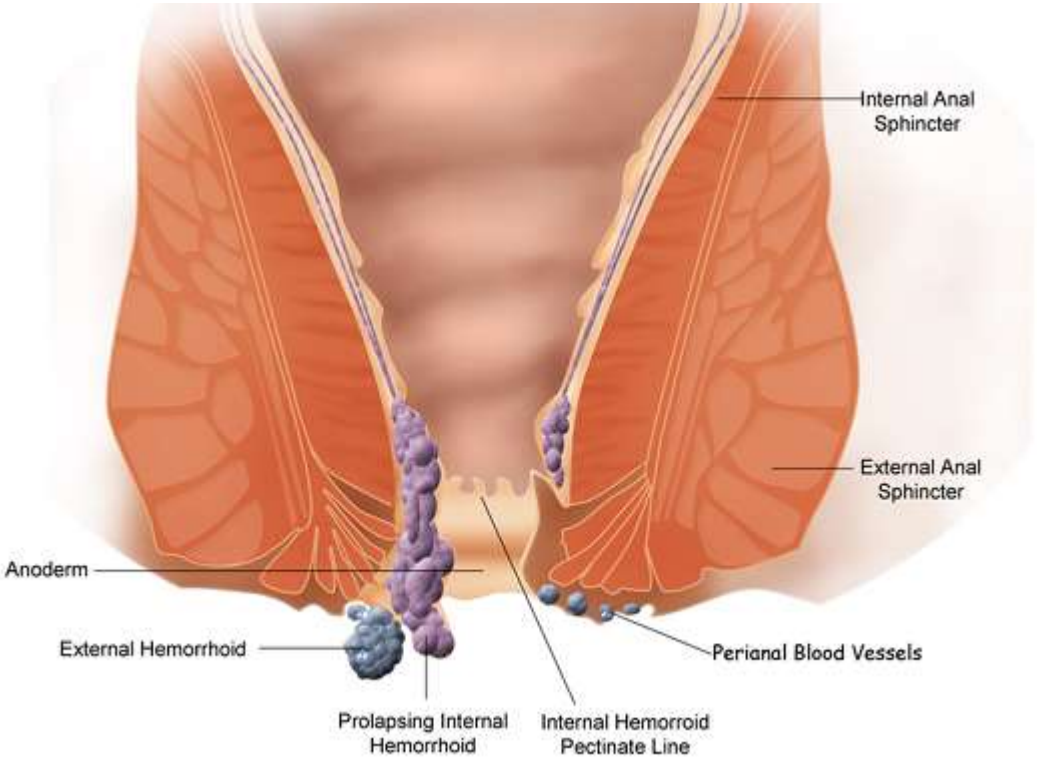
- Nausea is the unpleasant urge to vomit, can occur without vomiting or may precede vomiting
- Vomiting is the forceful ejection of stomach contents through the mouth, this generally a protective mechanism to remove harmful ingested substances can occur from many unrelated infectious and inflammatory conditions in the body
- Vomiting must be differentiated from regurgitation, which is the effortless movement of swallowed food contents or stomach acid from the stomach back into the mouth



http://www.catie.ca/en/practical-guides/hiv-drug-side-effects/11-nausea-appetite-loss http://patients.gi.org/topics/nausea-and-vomiting/

Interviewing of the patient: Hemorrhoids

- Hemorrhoids (piles) are swollen and inflamed veins in anus and lower rectum
- Hemorrhoids may result from straining during bowel movements or from the increased pressure on these veins during pregnancy, among other causes
- Hemorrhoids may be located inside the rectum (internal hemorrhoids), or they may develop under the skin around the anus (external hemorrhoids)



http://cdn.womentribe.com/wp-content/uploads/2011/11/hemorrhoids1.png http://patients.gi.org/topics/common-gi-symptoms/#common

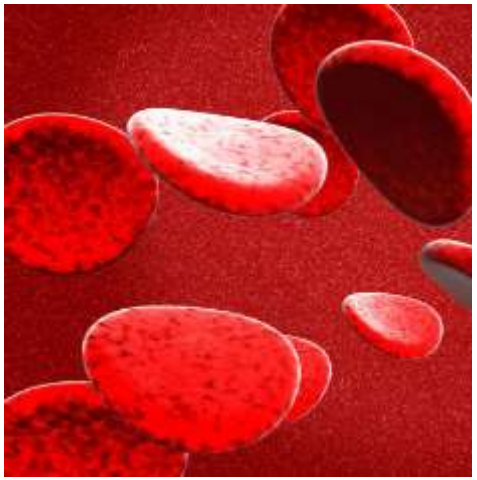
Interviewing of the patient: Blood in stool

- Blood in stool looks different depending on (1) how early it enters the intestines (and thus how much digestive action it has been exposed to) and on (2) how much there is (a little bit, more than a little, or a lot)
- Red blood in the stool has different clinical significance (and a different name) than brown or black blood in the stool
- The term can refer either to melena, with more blackish appearance, originating from upper gastrointestinal bleeding, or to hematochezia, with more red color, originating from lower gastrointestinal bleeding
- The term "blood in stool" is usually not used to describe fecal occult blood, which refers to blood that is not visible and thus is found only after chemical testing is performed

https://en.wikipedia.org/wiki/Blood_in_stool

Interviewing of the patient: Vomiting blood

- Vomiting blood (hematemesis) is the regurgitation of stomach contents mixed with blood, or the regurgitation of blood only
- Vomiting blood sounds jarring, but in some cases, it may be triggered by minor causes such as swallowing blood from a mouth



The appearance of the vomitus depends on the amount and character of the gastric contents at the time blood is vomited the length of time the blood has been in the stomach

Gastric acids change bright red blood to a brownish color and the vomitus is often described as 'coffee-ground' in color
Bright red blood in the vomitus indicates a fresh hemorrhage and little contact of the blood with gastric juices

https://edc2.healthtap.com/ht-staging/user_answer/avatars/367619/large/open-uri20120821-12615-1fvobd.jpeg?1386595038 http://patients.gi.org/topics/abdominal-pain/

Interviewing of the patient: upper & lower complaints

- Upper complaints include chest pain, chronic and recurrent abdominal pain, dyspepsia, lump in the throat, halitosis, hiccups, nausea and vomiting, and rumination
- Some upper GI complaints represent functional illness

- Lower complaints include constipation, diarrhea, gas and bloating, abdominal pain, and rectal pain or bleeding
- As with upper complaints, lower complaints may result from physiologic illness or represent a functional disorder

http://www.merckmanuals.com/professional/gastrointestinal-disorders/symptoms-of-gi-disorders/overview-of-gi-symptoms

Interviewing of the patient: list of additional possible complaints

- Dyspnea
- Cough
- Hemoptysis
- Edema
- Syncope
- Irritability
- Numbness/tingling
- Leg swelling
- Overweight
- Weight loss
- Halitosis
- Fever
- Sweatiness
-

- Fatigue
- Headache
- Dizziness
- Sleeplessness
- Dysphagia
- Odynophagia
- Loss of appetite
- Dysorexia (e.g. aversion to meat)
- Admixtures in feces
- Thirst
- Pain in the joints
- Skin changes

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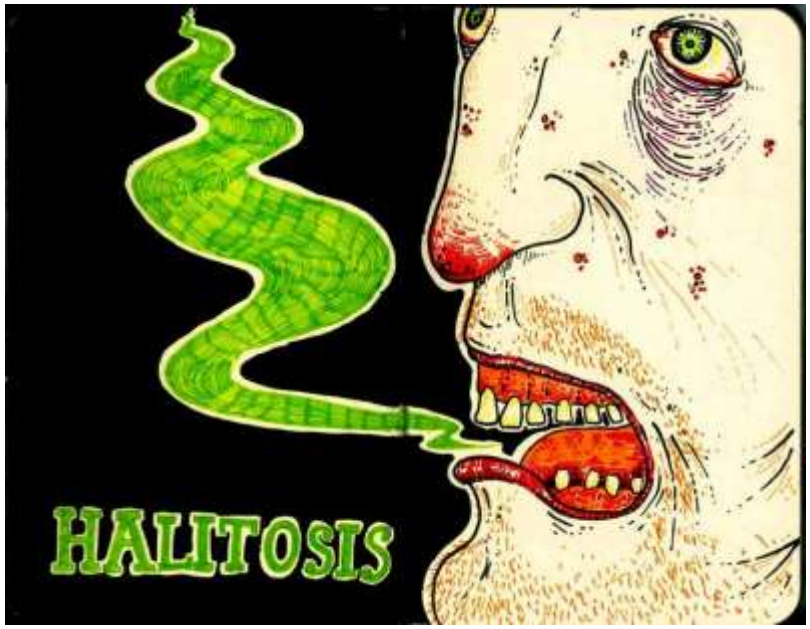
Interviewing of the patient: halitosis

- Halitosis (bad breath, feteroris, fege bosta), is a symptom in which a noticeably unpleasant odor is present on the exhaled breath
- Concern about halitosis is estimated to be the third most frequent reason for people to seek dental care, following tooth decay and gum disease; and about 20% of the general population are reported to suffer from it to some degree



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Interviewing of the patient: specific questions for set of chief complaints

Each of chief complaints will prompt a series of specific questions that will help arrive at a preliminary single diagnosis, or a group of different diagnoses

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Interviewing of the patient: example of specific questions in chief complaint

- Character
- Location
- Severity
- Timing
- Duration
- Radiation
- Provocation
- Relieving conditions
- When did it first start?
- How often does it occur?
- Is appetite good or has it changed?
- What brought it on?
- Were there associated symptoms
- Is it becoming more frequent with time?
- Are the symptoms lasting longer?
- How the symptoms relate to food intake?

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Interviewing of the patient: past medical history

In a medical encounter, a past medical history (abbreviated PMH), is the total sum of a patient's health status prior to the presenting problem

http://www.pedsendony.com/img/medical-forms.jpg https://en.wikipedia.org/wiki/Past_medical_history

Interviewing of the patient: prior or current treatment

- Diet (e.g. gluten-free diet)
- Medications
- Injections
- Gastrointestinal surgery
- Chiropractic
- Exercise/PT (Physical Therapy)
- ER (Emergency Room)
- Massage therapy

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http://img.getit.in/P1954721319.JPG

Interviewing of the patient: previous treatment and present status

- Previous Treatment
  - What?
  - Where?
  - When?
  - By whom?
- Present Status
  - Better vs. same vs. worse

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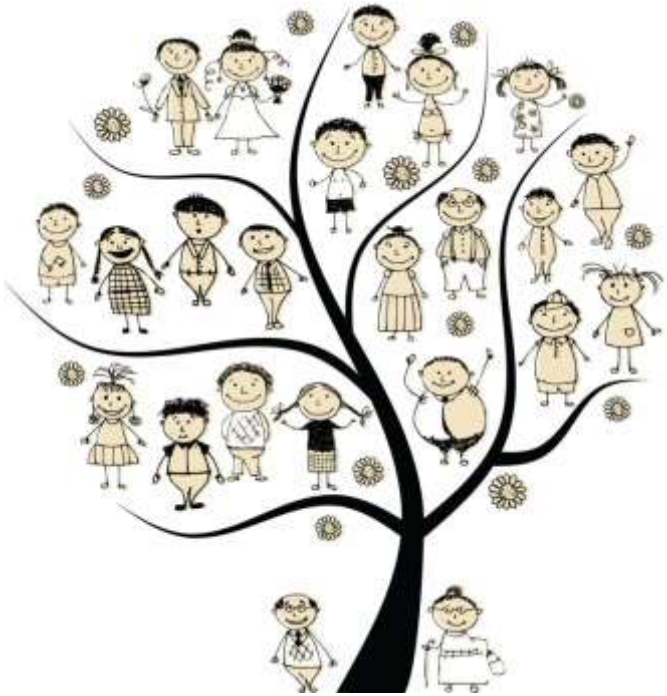
http://www.kuhp.kyoto-u.ac.jp/english/department/clinical/images/surgery_gastro.jpg

Interviewing of the patient: family history and genetic risk

- Certain gastrointestinal illnesses may occur in more than one member of a family
- The physician will inquire about the health of the patient's parents, brothers, sisters and children



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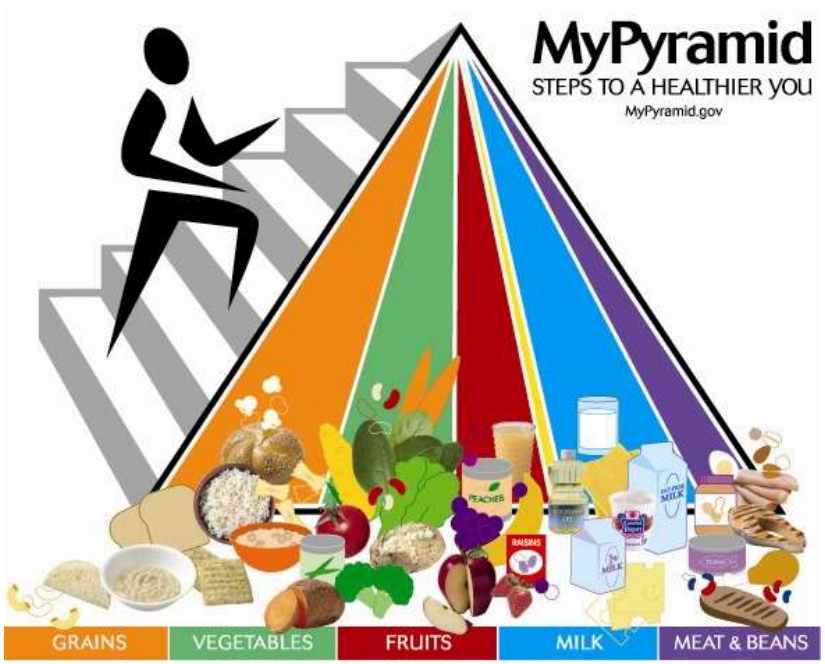
http://www.johngraycentre.org/wp-content/uploads/2013/06/family-tree-cartoon.jpg

Interviewing of the patient: diet history

- A diet history is important when assessing gastrointestinal tract function
- Many conditions manifest themselves as a result of alterations in dietary intake and absorption of nutrients



http://www.foodpyramid.com/wp-content/uploads/2009/09/MyPyramid2.jpg

Interviewing of the patient: social history

- High-risk behaviors
  - Alcohol, tobacco, or drug abuse
  - Depression
  - Anorexia/bulimia
  - Sedentary lifestyle
- Signs of any of the above behaviors may warrant referral to a secondary provider

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http://images.universityherald.com/data/images/full/1771/smoking.jpg?w=600

Interviewing of the patient: why take a medical history?

- Up 90% of conditions can be accurately diagnosed or recognized by conducting a thorough medical history and listening carefully to the patient's response(s)
- Determines the necessary tests and measures you should prioritize for your objective examination

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http://i.dailymail.co.uk/i/pix/2014/05/26/article-2639910-05771DF800000514-223_634x416.jpg

Interviewing of the patient: review of systems

- The "laundry list" of symptoms related to various organs of the body
- A series of questions helps seek out information that the patient may have neglected to provide the physician
- Review of systems helps to identify the patient's problem, or exclude different parts of the differential diagnosis

eplabdigest.com/files/templespot6.png heartsite.com/html/history.html
http://www.medicine.uiowa.edu/uploadedImages/Education/MD/Content/Teaching_and_Learning/Assessing_Clinical_Skills/student%20doctor%20and%20patient%20003%20(2).jpg

Interviewing of the patient: systemic enquiry

- General: fever, weight loss, loss of appetite, lethargy
- Respiratory and cardiovascular systems: shortness of breath, cough, hemoptysis, wheeze, chest pain
- Genito-urinary system: dysuria (pain on passing urine), frequency, terminal dribbling, urethral discharge
- Gynecological system: pelvic pain, vaginal bleeding, vaginal discharge, LMP
- Neurological system: headaches, dizziness, loss of consciousness, fits, faints, funny turns, numbness, tingling, weakness, problems speaking, change in vision

http://yabluchanskiy.com/klinicheskaya-praktika/approach-to-the-patient-with-disease-of-the-cardiovascular-system-podxod-k-pacientu-s-zabolevaniem-serdechno-sosudistoj-sistemy/

Interviewing of the patient: Gastrointestinal Quality of Life Index

- The Gastrointestinal Quality of Life Index is a questionnaire which measures Quality of Life (GIQLI) of the patient
- GIQLI is a multidimensional construct with several dimensions: emotional or psychological well being, physical functioning, social functioning, and symptoms of the disease and treatment
- A single item is also included that identifies perceived change in health, making the GIQLI a useful indicator for change in GIQLI over time and treatment

http://patientreportedoutcomes.ca/files/2014/04/GQLI.pdf

Physical examination of the patient: from general inspection to abdomen examination

- General inspection from the end of the bed
- General examination of:
  - Hands / pulse
  - Face
  - Lymph nodes
- Examination of the abdomen
  - Inspection
  - Palpation
  - Percussion
  - Auscultation

https://www2.le.ac.uk/departments/msce/existing/clinical-exam/documents/GI%20examination%20text.pdf http://www.osceskills.com/resources/Inspect-the-patients-hands1.jpg

Physical examination of the patient: positioning

Step	Position
Inspection	Supine, head and knees supported
Auscultation	Supine, head and knees supported
Palpation	Supine, head and knees supported
Percussion	Supine, head and knees supported
Check for ascites	Supine, may need to roll patient for shifting dullness
Rectal examination	Left lateral decubitus
Inguinal examination	Standing

http://www.ncbi.nlm.nih.gov/books/NBK405/

Physical examination of the patient: general inspection

- Whether patient is comfortable at rest
- Do patient appears to be tachypnoeic
- Are there any obvious patient’ skin color changes
- Are there any obvious medical appliances around the bed (such as patient controlled analgesia)
- Are there any medications around (although this is unlikely as all medications should be in a locked cupboard)

https://www2.le.ac.uk/departments/msce/existing/clinical-exam/documents/GI%20examination%20text.pdf http://www.osceskills.com/e-learning/subjects/abdominal-examination/

Physical examination of the patient: hands inspection

- Temperature
- Skin turgor for hydration
- Koilonychias
- Leukonychia
- Nail clubbing
- Palmar erythema
- Nicotine staining
- Dupuytren's contracture
- Peripheral cyanosis
- radial pulse

http://www.osceskills.com/e-learning/subjects/abdominal-examination/ en.wikipedia.org/wiki/Cardiac_examination

Physical examination of the patient: face inspection

- Pale conjunctiva of anaemia
- Yellow sclera of jaundice
- Changes to the tongue e.g. glossitis, macroglossia, ulcers, candidiasis

https://www2.le.ac.uk/departments/msce/existing/clinical-exam/documents/GI%20examination%20text.pdf http://www.osceskills.com/e-learning/subjects/abdominal-examination/

Physical examination of the patient: neck inspection

- Palpate for enlarged lymph nodes, first from the front, then back/right
- A palpable enlarged supraclavicular (Virchow's) node is known as Troisier's Sign which drains the thoracic duct. Enlargement of this node may suggest metastatic deposits from a malignancy in any of these areas (e.g. gastric cancer)

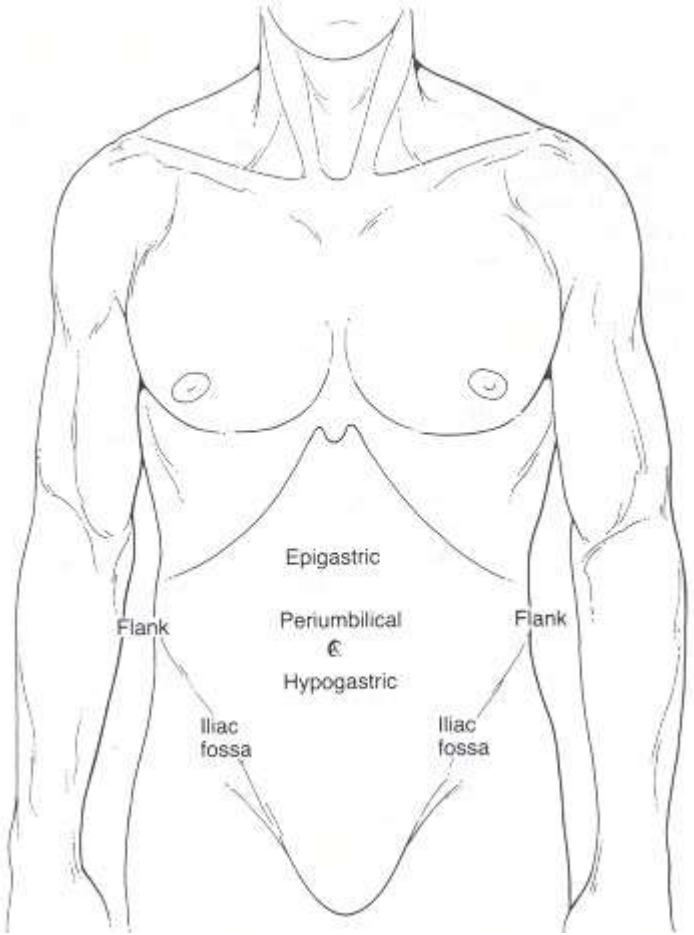
https://www2.le.ac.uk/departments/msce/existing/clinical-exam/documents/GI%20examination%20text.pdf http://www.osceskills.com/e-learning/subjects/abdominal-examination/

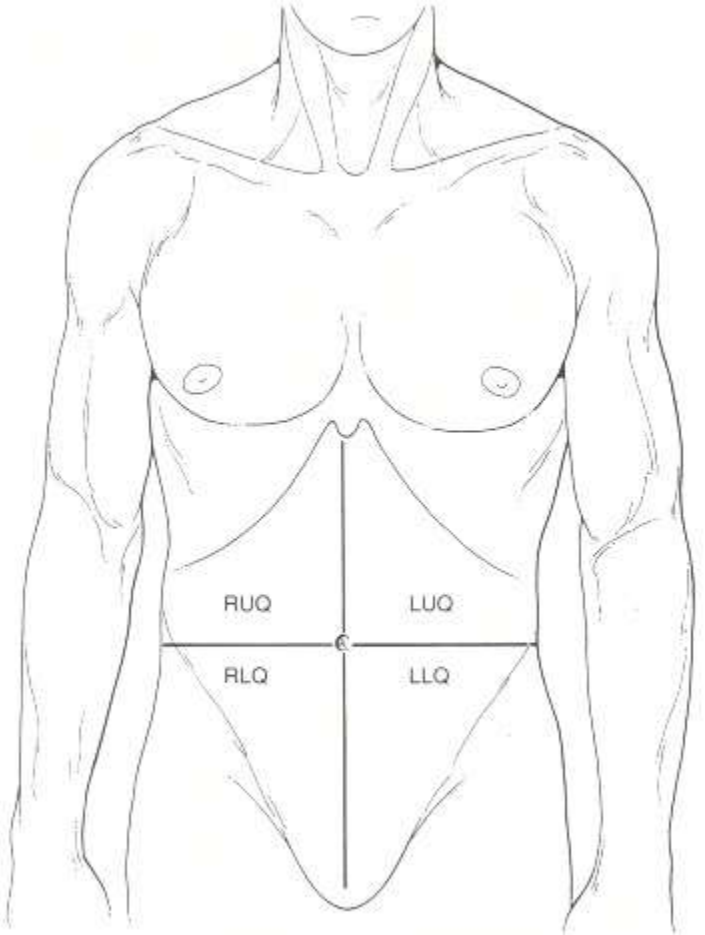
Physical examination of the patient: chest inspection

- gynaecomastia in men
- the presence of 5 or more spider naevi

https://www2.le.ac.uk/departments/msce/existing/clinical-exam/documents/GI%20examination%20text.pdf

Physical examination of the patient: abdominal areas and quadrants





http://www.ncbi.nlm.nih.gov/books/NBK405/

Physical examination of the patient: abdomen inspection

- Scars
- Abdominal distension
- Focal swelling
- Asymmetry
- Dilated/prominent veins
- Visible peristalsis
- Obvious pulsation
- Skin discoloration
- Location and nature of any surgical stomas

https://www2.le.ac.uk/departments/msce/existing/clinical-exam/documents/GI%20examination%20text.pdf http://i.ytimg.com/vi/Ler5z9GPtV4/hqdefault.jpg

Physical examination of the patient: abdomen auscultation

- Auscultation for bowel sounds may be carried out before percussion and palpation due to adverse effect that these procedures may have on the sound from the bowels
- Bowel sounds listen with the diaphragm of the stethoscope just for up to 30 seconds below the umbilicus (normal, ‘tinkling’, absent)
- High pitched or absent sounds may indicate bowel obstruction
- Absence of sounds may be also be caused by peritonitis

https://www2.le.ac.uk/departments/msce/existing/clinical-exam/documents/GI%20examination%20text.pdf http://www.osceskills.com/e-learning/subjects/abdominal-examination/

Physical examination of the patient: abdomen light palpation

- Gently palpate all nine areas
- Start away from known pain
- If there is pain on light palpation, try and determine if this is rebound tenderness

https://www2.le.ac.uk/departments/msce/existing/clinical-exam/documents/GI%20examination%20text.pdf http://www.osceskills.com/e-learning/subjects/abdominal-examination/

Physical examination of the patient: abdomen deep palpation

- Note any masses or structural abnormality
- Masses should be described in terms of site, size, shape, surface, consistency, mobility, movement with respiration, tenderness and pulsatility

https://www2.le.ac.uk/departments/msce/existing/clinical-exam/documents/GI%20examination%20text.pdf http://images.wisegeek.com/hands-on-abdomen-of-man.jpg

Physical examination of the patient: abdomen percussion

- You should percuss any lumps or masses identified on palpation to determine their size and nature
- Percuss individual organs to help determine their size
- If the abdomen appears distended and you suspect the presence of ascites test for ‘shifting dullness’ and ‘fluid thrill’

https://www2.le.ac.uk/departments/msce/existing/clinical-exam/documents/GI%20examination%20text.pdf http://www.osceskills.com/e-learning/subjects/abdominal-examination/

Instrumental methods: flat-plate film of the abdomen

The first x-ray study that the health care provider orders when diagnosing a gastrointestinal problem

https://wsoonli15.wordpress.com/author/wsoonli15/page/3/

Instrumental methods: upper gastrointestinal tract radiography

- An x-ray examination of the esophagus, stomach and the duodenum using a special form of x-ray (fluoroscopy) and an orally ingested contrast material such as barium
- In addition to drinking barium, some patients are also given baking-soda crystals (similar to Alka-Seltzer) to further improve the images

http://www.radiologyinfo.org/en/info.cfm?pg=uppergi http://www.radiologyinfo.org/photocat/popup/ugi-xray-smbowel.jpg

Instrumental methods: lower gastrointestinal tract radiography

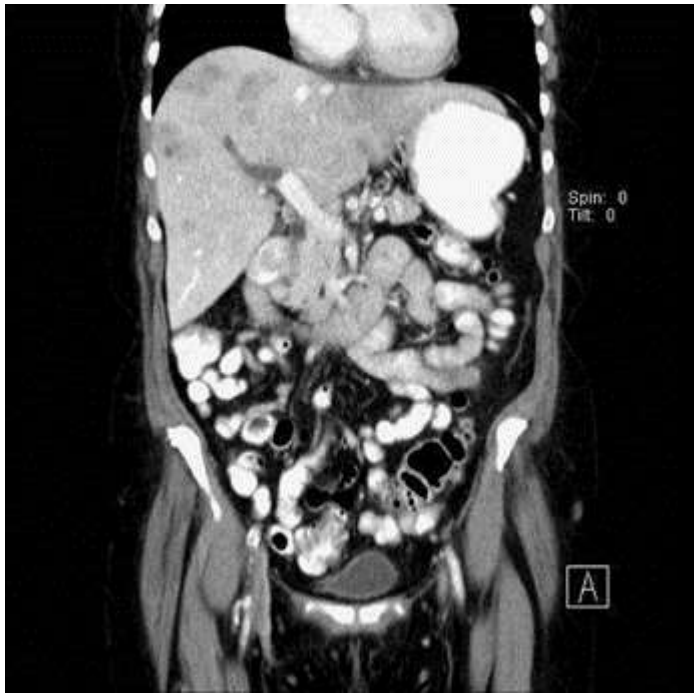
- An x-ray examination of the large intestine
- The examination evaluates the right or ascending colon, the transverse colon, the left or descending colon, the sigmoid colon and the rectum
- The appendix and a portion of the distal small intestine may also be included

http://www.cyberphysics.co.uk/graphics/photos/medical/barium.png http://www.radiologyinfo.org/photocat/popup/ugi-xray-smbowel.jpg

Instrumental methods: computed tomography

When to perform CT of the GI tract

- Suspected bowel obstruction
- Suspected bowel perforation
- Abdominal pain
- Detect suspected GI malignancy
- Stage known GI malignancy

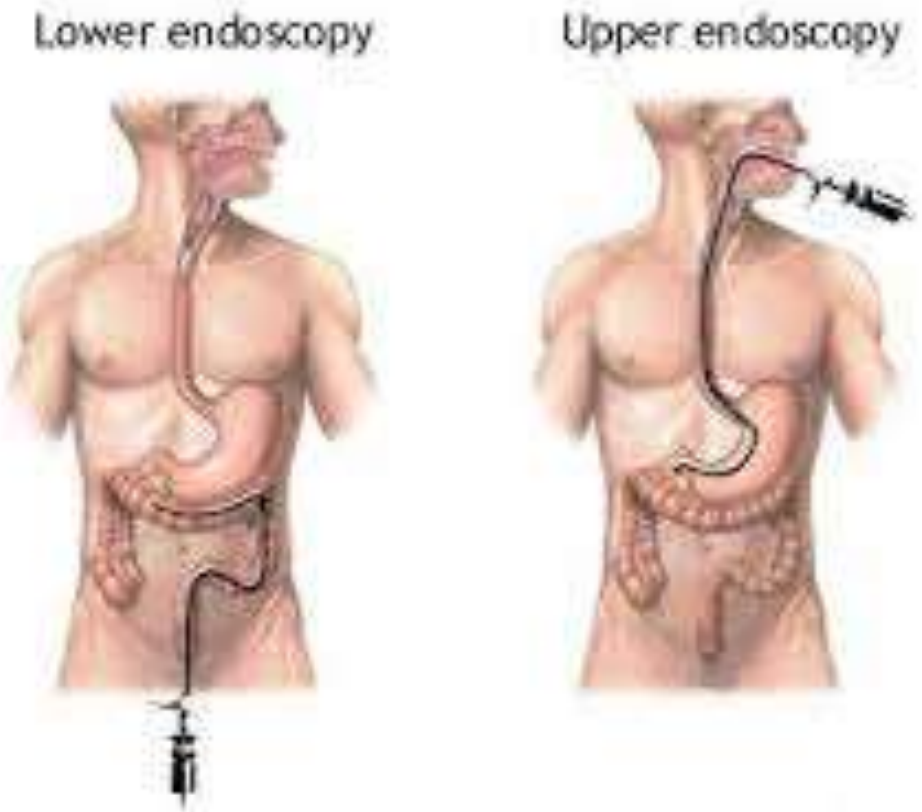


http://www.nature.com/ajg/journal/v104/n3s/images/ajg2009492_11i10.jpg http://www.radiologyinfo.org/photocat/popup/ugi-xray-smbowel.jpg

Instrumental methods: endoscopy

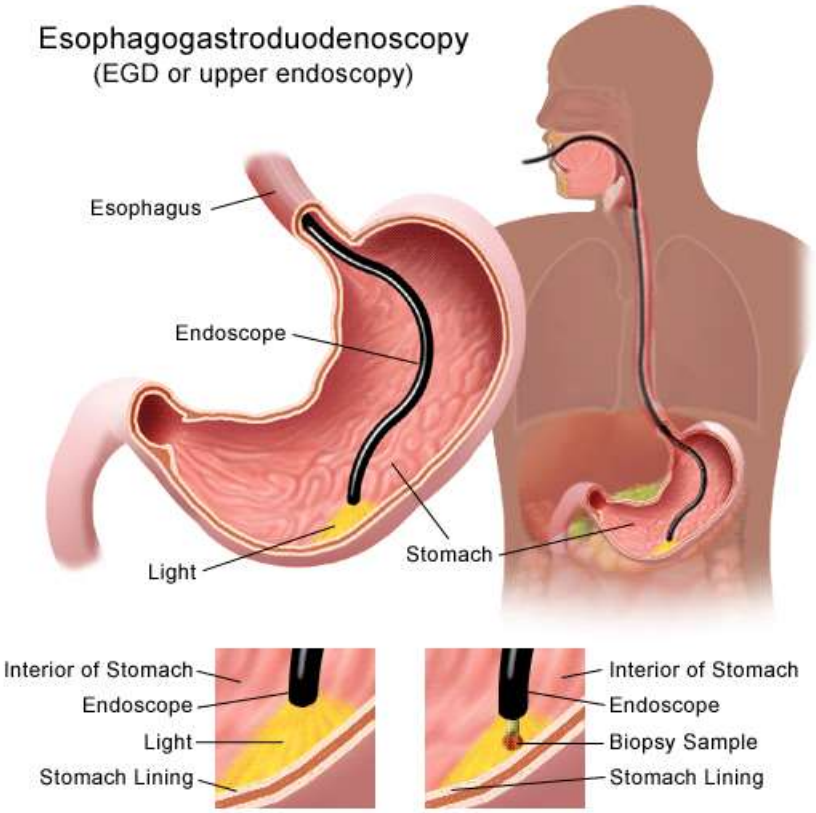
Direct visualization of the gastrointestinal tract by means of a flexible fiberoptic endoscope:

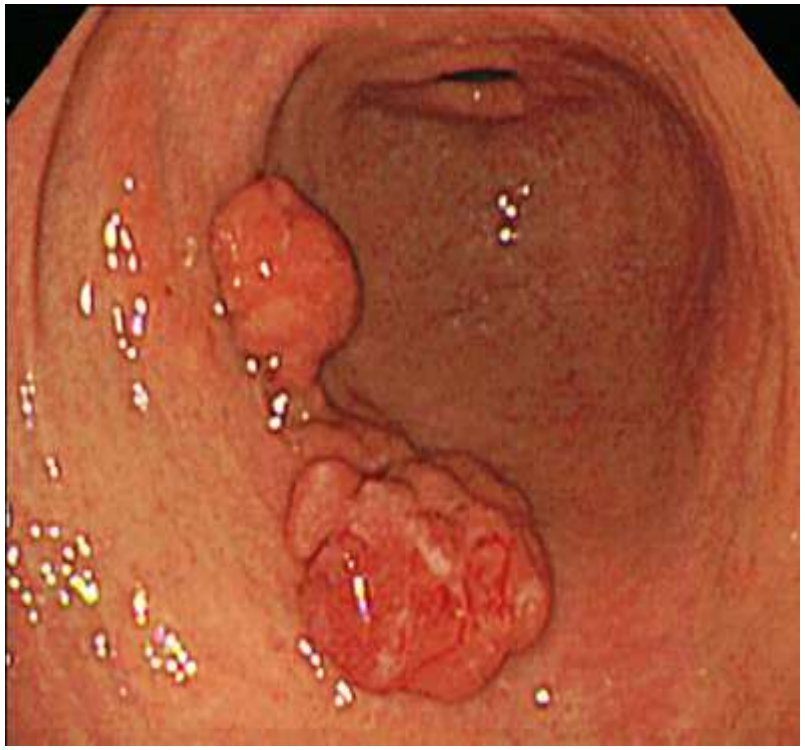
- fibroesophagogastroduodenoscopy (upper endoscopy)
- colonoscopy (lower endoscopy)



http://www.nature.com/ajg/journal/v104/n3s/images/ajg2009492_11i10.jpg http://www.radiologyinfo.org/photocat/popup/ugi-xray-smbowel.jpg

Instrumental methods: esophagogastroduodenoscopy

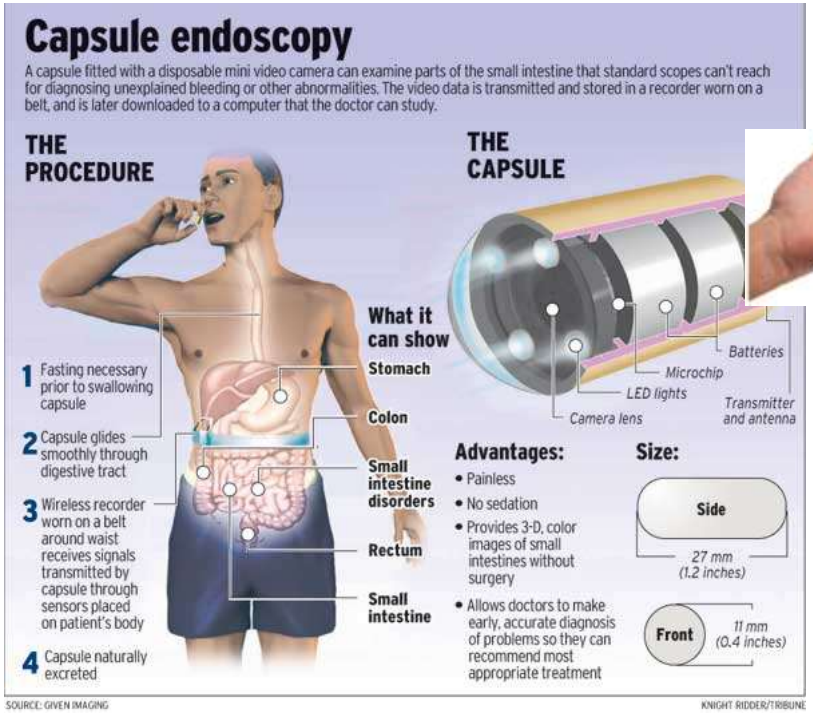




Visual examination of the esophagus, stomach, and duodenum

http://www.hopkinsmedicine.org/healthlibrary/test_procedures/gastroenterology/esophagogastroduodenoscopy_92,P07717/
http://www.radiologyinfo.org/photocat/popup/ugi-xray-smbowel.jpg http://synapse.koreamed.org/ArticleImage/5037JKSS/jkss-81-419-g001-l.jpg

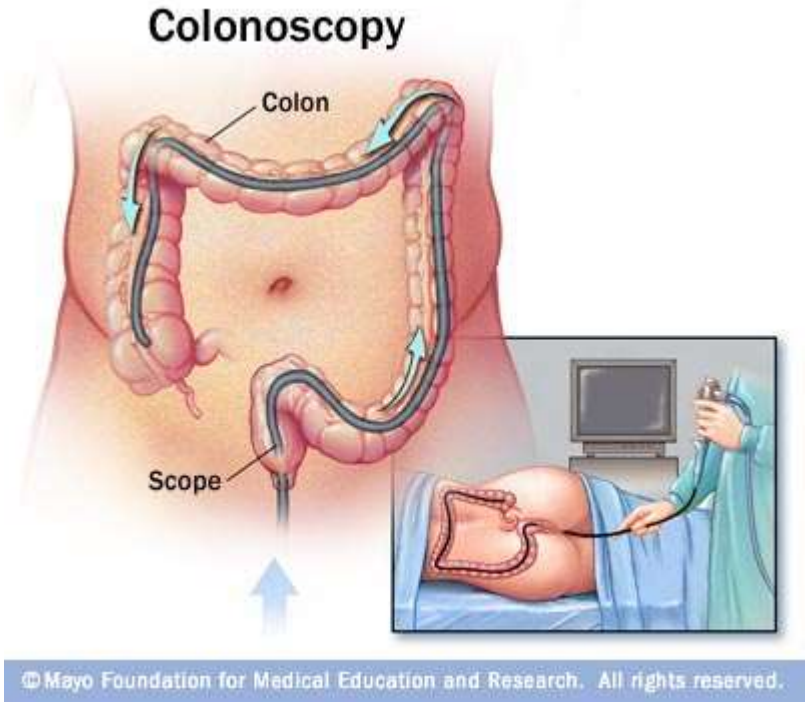
Instrumental methods: small bowel capsule enteroscopy

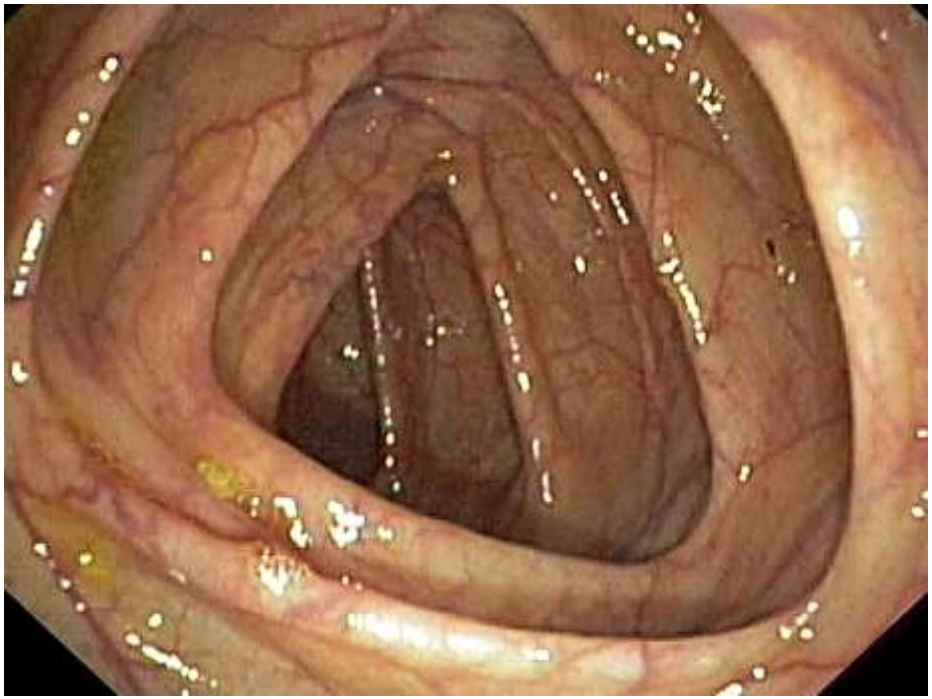


Visualization of the small intestine, application of belt with sensors

http://www.bgapc.com/wp-content/uploads/2010/07/capendoscopy.jpg http://img.medscape.com/fullsize/migrated/586/771/erm586771.fig1.jpg

Instrumental methods: colonoscopy

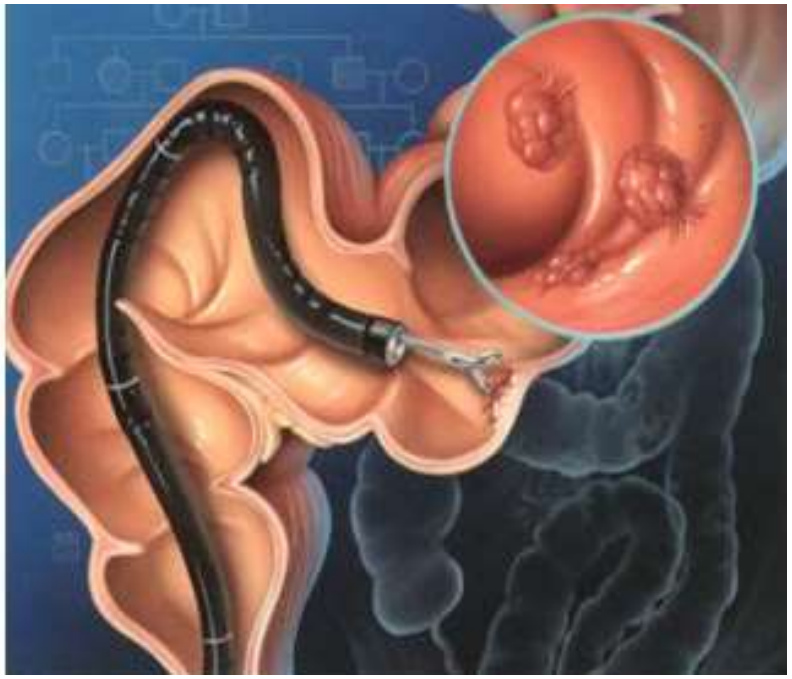


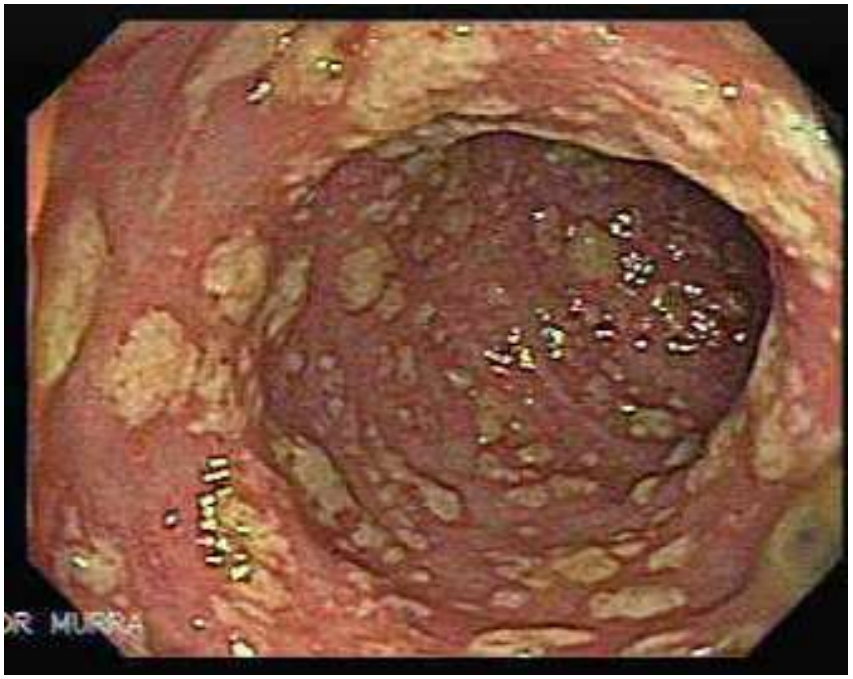


Endoscopic examination of the entire large bowel

http://greatlakesgastroenterology.com/wp-content/uploads/2013/07/colonoscopy.jpg http://img.medscape.com/news/2014/ps_141008_colonoscopy_800x600.jpg

Instrumental methods: proctosigmoidoscopy

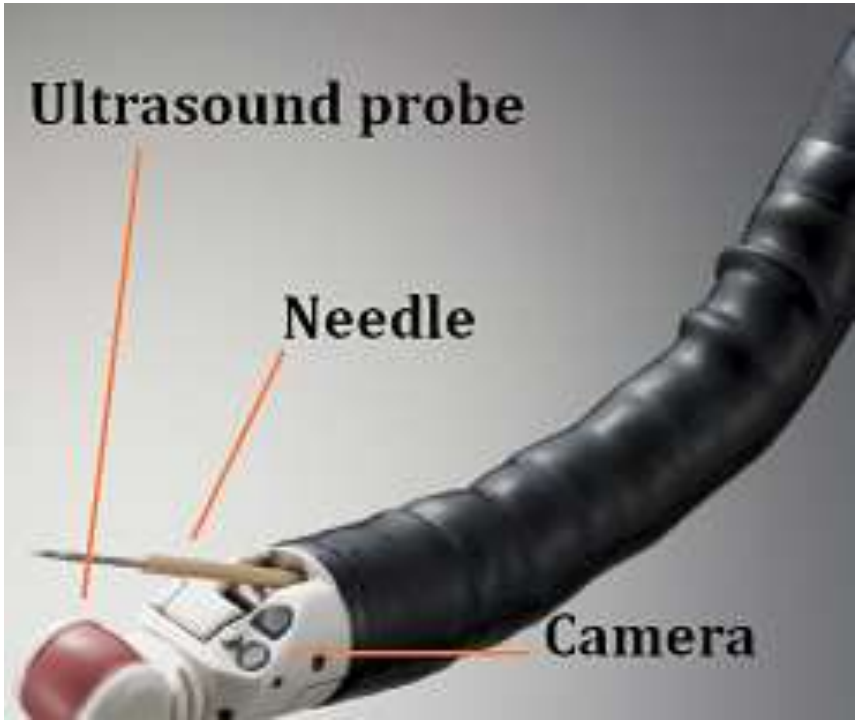


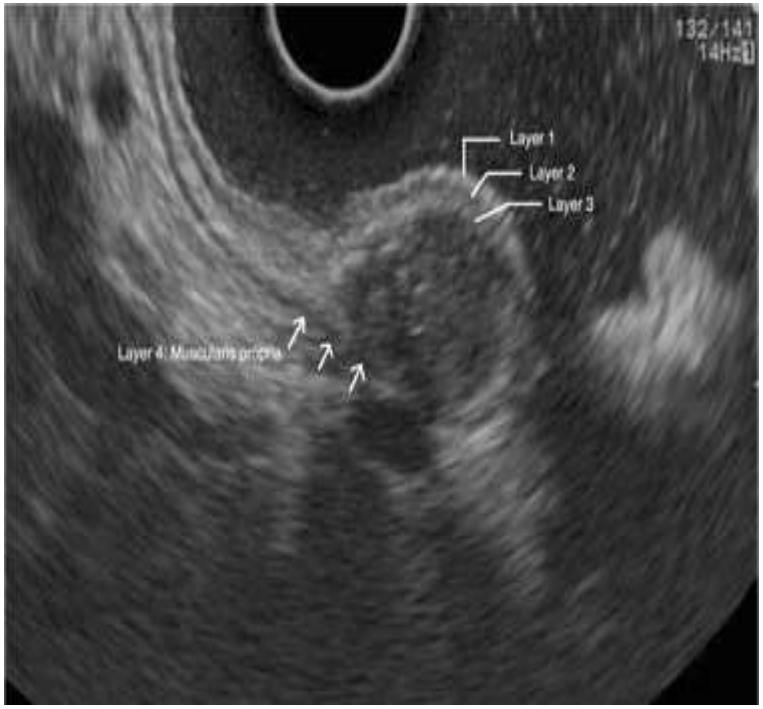


Endoscopic examination of the rectum and sigmoid colon

http://i1090.photobucket.com/albums/i376/JenniferStone1/Colonoscopy2.jpg http://www.gastrointestinalatlas.com/imagenes/ColitisssPseudoMembranousx4.jpg

Instrumental methods: endoscopic ultrasonography





http://health.usf.edu/medicine/internalmedicine/digestive/~/media/6E3C13F5CF8240E896A28B7991BA32CB.ashx http://tropicalgastro.com/UserFiles/Image/tg-y10-v31-n1-p13-3.gif

laboratory methods: tests

- Blood count
- Blood sugar tests
- Blood clotting factors
- Electrolytes
- Enzyme & protein blood tests
- Lipid blood tests
- C-reactive protein
- Fecal occult blood test
- Gut flora examination
- Ova and parasites exam
- *Clostridium difficile* infection test

Photo courtesy of Cepheid

http://www.gastroendonews.com/ViewArticle.aspx?d=FDA+Update+%26+Product+News&d_id=183&i=July+2011&i_id=748&a_id=17570

laboratory methods: enzyme & protein blood tests

- Alanine Aminotransferase (ALT; also called SGPT), goal value: 5 – 50 U/L
- Aspartate Aminotransferase (AST; SGOT), goal value: 7 – 40 U/L
- Creatinine (Cr), goal value: 0.7 – 1.4 mg/dL
- Creatine Kinase (CK), goal value: 30 – 220 U/L
- Lactate dehydrogenase (LDH), goal value: 100 - 220 U/L
- Myoglobin (Mb), goal value: 30 – 90 µg/mL
- Troponin T (cTNT), goal value: 0.0 - 0.10 µg/mL

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laboratory methods: lipid blood tests

- Total cholesterol. A high level can put you at increased risk of heart disease. Ideally, total cholesterol should be below 200 milligrams per deciliter (mg/dL), or 5.2 millimoles per liter (mmol/L)
- Low-density lipoprotein (LDL) cholesterol. Too much of it in blood causes the accumulation of fatty deposits (plaques) in arteries (atherosclerosis). Ideally, your LDL cholesterol level should be less than 130 mg/dL (3.4 mmol/L), and under 100 mg/dL (2.6 mmol/L) is even better
- High-density lipoprotein (HDL) cholesterol. Ideally, your HDL cholesterol level should be 60 mg/dL (1.6 mmol/L) or higher, though it's common that HDL cholesterol is higher in women than men.
- Triglycerides. High levels increase risk of heart disease. Ideally, triglyceride level should be less than 150 mg/dL (1.7 mmol/L)

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laboratory methods: C-reactive protein

- CRP is a sign of inflammation somewhere in the body
- Inflammation plays a central role in the process of atherosclerosis, in which fatty deposits clog arteries
- CRP test result can be interpreted as putting heart disease risk at:
  - Low risk (less than 1.0 milligrams per liter, or mg/L)
  - Average risk (1.0 to 3.0 mg/L)
  - High risk (above 3.0 mg/L)

http://yabluchanskiy.com/klinicheskaya-praktika/approach-to-the-patient-with-disease-of-the-cardiovascular-system-podxod-k-pacientu-s-zabolevaniem-serdechno-sosudistoj-sistemy/

laboratory methods:
Fecal occult blood test

- Fecal occult blood (FOB) refers to blood in the feces that is not visibly apparent (unlike other types of blood in stool such as melena or hematochezia)
- A fecal occult blood test (FOBT) checks for hidden (occult) blood in the stool (feces)
- Newer tests look for globin, DNA, or other blood factors including transferrin, while conventional stool guaiac tests look for heme

https://en.wikipedia.org/wiki/Fecal_occult_blood

laboratory methods: gut flora examination

- Gut flora (gut microbiota), consists of a complex community of microorganism species that live in the digestive tracts
- The gut microbiome refer to the genomes of the gut microbiota
- Gut microorganisms benefit the host by gleaning the energy from the fermentation of undigested carbohydrates and the subsequent absorption of short-chain fatty acids
- The human body carries about 100 trillion microorganisms in its intestines, a number ten times greater than the total number of human cells in the body
- Bacteria in the gut fulfill a host of useful functions for humans, including digestion of unutilized energy substrates, stimulating cell growth, repressing the growth of harmful microorganisms, training the immune system to respond only to pathogens, and defending against some diseases
- Altering the numbers of gut bacteria, for example by taking broad-spectrum antibiotics, may affect the host's health and ability to digest food

https://en.wikipedia.org/wiki/Gut_flora

laboratory methods: ova and parasites exam

- The ova and parasite (O&P) exam is used to help diagnose the cause of prolonged diarrhea
- It is ordered to determine whether there are parasites present in the lower digestive tract and, if so, to identify them
- Since there are many other causes of diarrhea, the O&P is often ordered along with other tests, such as a stool culture, which identifies the presence of disease-causing bacteria in the stool
- O&P tests may also be ordered to monitor the effectiveness of treatment for a parasitic infection

https://labtestsonline.org/understanding/analytes/op/tab/test/

laboratory methods: *clostridium difficile* infection tests

- Tests to detect *Clostridium difficile* (*C. difficile*) and its toxins are used to diagnose diarrhea and other conditions and complications caused by toxin-producing *C. difficile*
- Conditions resulting from this bacterial infection include pseudomembranous colitis, in which dead tissue, fibrous protein, and numerous white blood cells form a lining over the surface of the inflamed bowel, toxic megacolon, and perforated bowel
- There are a number of tests some of them are very sensitive but take some days to complete, while other tests are rapid (several hours) but are not considered to be very sensitive or specific

http://yabluchanskiy.com/klinicheskaya-praktika/approach-to-the-patient-with-disease-of-the-cardiovascular-system-podxod-k-pacientu-s-zabolevaniem-serdechno-sosudistoj-sistemy/

laboratory methods: the evaluation of malabsorption/maldigestion

Carbohydrate malabsorption

- D-xylose absorption test (decreased)
- Disaccharidase test (decreased)
- Breath hydrogen test (increased)

Fat malabsorption

- Fecal fat determination (elevated)
- 14C-triolein breath test (decreased)

Bacterial overgrowth

- 14C-Xylose breath test (increased)

Specific disorders

- Celiac disease (Endomysial antibody present)
- Pernicious anemia (Schilling test - absorption of vitamin B12)

Instrumental and laboratory methods: other tests

- Gastric Function Tests (Basal gastric secretion; Pentagastrin stimulation test)
- Esophageal Manometry: Measures both the movement and pressures in the esophagus.
- Anorectal Manometry: Detects problems with bowel movement by measuring the tone in the anal sphincter and rectal muscles.
- Esophageal 24-hour pH Monitoring: During a 24-hour period, both acid and non-acid reflux is monitored in the esophagus.
- Secretin Stimulation Test: Measures the ability of the pancreas to respond to secretin, a digestive hormone.
- Gastrointestinal Motility Studies: Exam to look at how the stomach and upper small intestinal muscles contract

Accent on diagnosis of H. Pylori

- Biopsy
  - Culture
  - Rapid urease activity tests
- 3C-breath test – gold standard
- 3. Immunoassay for IgG antibody

Glossary of Patients Examination with Diseases of the Gastrointestinal Tract

Gastrointestinal Glossary of Terms